

Unit Plan

Big idea

Gadgets & Gizmos - Electricity

To learn about the technological design process - identifying a need, developing and producing a product.

Learning Areas (highlight relevant areas)

English	Maths	Social Sciences	Science	Technology	Health/PE	The Arts	Maori
Listening Reading Viewing Speaking Writing Presenting	Number & Algebra Geometry & Measurement Statistics	Identity, Culture & Organisation Place & Environment Continuity & Change Economic World	Nature of Science Living World Physical World Material World Planet Earth & Beyond	Technological Practice Technological Knowledge Nature of Technology	Personal Health & Physical Development Movement Concepts & Motor Skills Relationships with Other People Healthy Communities & Environments	Dance Drama Music Visual Arts	Listening Reading Viewing Speaking Writing Presenting

Values

Excellence
Innovation, Inquiry, and Curiosity
Diversity
Equity
Community and Participation
Ecological Sustainability
Integrity
Respect

Key Competencies

Opportunities will be given for all Key Competencies to be developed. We will focus on the highlighted one(s).

Thinking
Relating to Others
Using Language, Symbols, and Texts
Managing Self
Participating and Contributing

Achievement Objectives

TECHNOLOGY -

Technological Practice - Lv 3 & 4

Undertake planning to identify key stages and resources to complete a technological outcome where planning includes reviews of progress and identification of implications for subsequent decisions. (Lv 3)

Undertake planning that includes reviewing of progress to determine the effectiveness of past actions and resourcing, exploring implications for future actions and accessing of resources and accessing stakeholder feedback to ensure the development of a technological outcome to completion. (Lv 4)

SCIENCE -

Physical World - Lv 3 & 4

Use some scientific ideas to explain physical phenomena, such as electricity.

ENGLISH -

Reading - Lv 3 & 4

Uses an increasing vocabulary that can be used to make meaning of text.

Writing - Lv 3 & 4

Uses a range of vocabulary to communicate (precise) meaning.

Deep Understandings and Thinking Skills

Students will be able to explain how:

- ✓ simple electrical circuits work and how to make them.
- ✓ to produce a product, according to an identified need, using a design process incorporating planning, making and evaluation.

Learning Experiences

KNOWLEDGE & SKILLS

Week 1 - Introduction to electronics - safety, signs and symbols. Glossary of electrical words and terms. Natural electricity - lightning.

Week 2 - Electricity generation, storage devices (batteries), LED's, bulbs, switches, torches etc. Use of 'reciprocal reading' techniques for information gathering.

Week 3 - Simple circuits - making circuits that work using an LED and using a range of switches. Develop a test for determining a *conductor* or *insulator*.

Week 4 - Circuits in series and parallel, resistors, fuses etc. Designing tests to determine the changes these things produce in a circuit.

Week 5 - Circuit design, drawing and making.

DESIGN, MAKE AND EVALUATE

Week 6 - Work on planning a project to make, after identifying a need. Produce a timeline, and develop a learning journal. Gather resources and necessary equipment.

Week 7 - 9 - Working to produce a project individually or in pairs. Maintaining a learning journal and evaluating progress. Other work could include; naming the product, packaging and labeling, advertising etc. Preparation for 'Inventor's Day', where products will be presented. Self-evaluation by students (and peers) and assessment by teacher on agreed criteria.

Assessment

Resources:
Self assessment/evaluation }
Peer evaluation } On agreed assessment criteria
Teacher assessment }
Making Better Sense of the Physical World (MOE), Let's make our own invention - electricity (Brian Coles, MUCE), Megawatt - Teacher Resource (Te Manawa).

School Journals - ~~The Sleeping Giant, 89 - 2 - 2~~

- Water Power, 05 - 2 - 4

- Brake lights, 95 - 4 - 3

Connected - Electric Map, The Power of Rubbish, 98 No3

- A New Life for Old Machines, 07 No3

Numerous National Library books and videos

www.edfenergy.com/powerup/index.html

Evaluation of Unit

This unit of work was probably one of my favourites, in both teaching and learning outcomes. The children were motivated and interested, particularly given the practical nature of the learning experiences - *all the hands-on things we did in the beginning of the term were cool and helped me learn about electricity quickly, Amy Yr 8 - I had fun doing it, it wasn't boring and it even worked on Inventor's Day, Hunter Yr 6 - I learned what insulators and conductors were because we did lots of testing and I liked testing with electricity, Hattie Yr 7* - from student evaluations.

It does, however, require careful budgeting, as the children can get carried away with ideas and the need for electrical components. 'Guidance' with projects is required to support the possibility of producing successful projects. Inventor's Day was a great sharing experience, and the children were proud to show what they had done.

Testing using ARB material showed a good understanding, across all levels, of simple circuits for science.

Steve Weeks Sept 09



